

WHAT IS CLAIMED IS:

1           1. In a wireless packet communication network  
2 comprising a plurality of nodes, wherein a first node may  
3 directly communicate with some nodes and not with others, a  
4 method for preventing contention over a shared communications  
5 medium comprising the steps of:

6           receiving, at said first node, a packet from a  
7 second node including an estimated receiver processing delay  
8 of said second node; thereafter

9           receiving, at said first node, a request to send  
10 (RTS) packet sent by a third node and addressed to said second  
11 node; and thereafter

12          responding, at said first node, to said RTS packet,  
13 by inhibiting transmission at said first node for a time  
14 period, wherein said time period represents an estimate of  
15 time required at said third node to reply to said RTS packet  
16 with a clear-to-send (CTS) packet and is determined in  
17 accordance with said estimated receiver processing delay.

1           2. In a wireless packet communication network  
2 comprising a plurality of nodes, wherein a first node may  
3 directly communicate with some nodes and not with others, a  
4 method for preventing contention over a shared communications  
5 medium comprising the steps of:

6           receiving, at said first node, a packet from a  
7 second node including an estimated receiver processing delay  
8 of said second node; thereafter

9           receiving, at said first node, a clear to send (CTS)  
10 packet sent by a third node and addressed to said second node,  
11 said CTS packet including a length of data to be transmitted  
12 from said second node to said third node; and thereafter

13          responding, at said first node, to said CTS packet,  
14 by inhibiting transmission at said first node for a time  
15 period, wherein said time period is determined in accordance  
16 with said length of data and said estimated receiver  
17 processing delay of said second node.

1           3.    A first node adapted to transmit and receive  
2 data packets in a wireless communication network, said first  
3 node comprising:

4               means for receiving a packet from a second node  
5 including an estimated receiver processing delay;

6               means for receiving a request to send (RTS) packet  
7 sent by a third node and addressed to said second node; and

8               means for responding to said RTS packet by  
9 inhibiting transmission at said first node for a time period,  
10 wherein said time period represents an estimate of time  
11 required at said third node to reply to said RTS packet with a  
12 clear-to-send packet and is determined in accordance with said  
13 estimated receiver processing delay.

1           4.    A first node adapted to transmit and receive  
2 data packets in a wireless communication network, said first  
3 node comprising:

4               means for receiving a packet from a second node  
5 including an estimated receiver processing delay of said  
6 second node;

7               means for receiving a clear to send (CTS) packet  
8 sent by a third node and addressed to said second node, said  
9 CTS packet including a length of data to be transmitted from  
10 said second node to said third node; and

11              means for responding to said CTS packet, by  
12 inhibiting transmission at said first node for a time period,  
13 wherein said time period is determined in accordance with said  
14 length of data and said estimated receiver processing delay of  
15 said second node.

1           5.    In a wireless packet communication network, a  
2 method for collecting, at a selected node, information about  
3 adjacent nodes with which said selected node may directly  
4 communicate, said method comprising the steps of:

5               a)   receiving a first link protocol message sent by  
6 a first adjacent node; thereafter

7               b)   responding to said first link protocol message  
8 by electronically storing an entry including a link layer

9 address of said first adjacent node in a link table, said  
10 indication including an indication of a candidate link to said  
11 first adjacent node;  
12 setting a first timer to count for a first  
13 predetermined time period;  
14 transmitting a second link protocol  
15 message including a link layer address of said first adjacent  
16 node;  
17 c) if said first timer expires prior to receipt of  
18 any third link protocol message from said first adjacent node,  
19 deleting said link table entry; and  
20 d) if a third link protocol message including  
21 parameters of said first adjacent node is received prior to  
22 expiration of said first timer, changing said candidate link  
23 indication to a good link indication.

1 6. The method of claim 5 wherein said (d) step  
2 comprises the substeps of:  
3 if said third link protocol message replying to said  
4 second link protocol message is received prior to expiration  
5 of said first timer,  
6 (d1) extracting parameters of said first adjacent  
7 node from said third link protocol message; and  
8 (d2) storing said parameters as a part of said link  
9 table entry.

1 7. The method of claim 5 wherein said (d) step  
2 comprises the substeps of:  
3 if said third link protocol message replying to said  
4 second link protocol message is received prior to expiration  
5 of said first timer,  
6 (d1) invoking a network layer protocol to obtain an  
7 network layer address of said first adjacent node,  
8 (d2) electronically storing, at said selected node,  
9 said network layer address of said first adjacent node and  
10 said link layer address of said first adjacent node as an  
11 entry in an address resolution table.

1           8.    The method of claim 7 wherein said (d1) step  
2 comprises invoking a Reverse Address Resolution Protocol  
3 (RARP) program.

1           9.    In a wireless packet communication network,  
2 apparatus for collecting, at a selected node, information  
3 about adjacent nodes with which said selected node may  
4 directly communicate, said apparatus comprising:

5               a)   means for receiving a first link protocol  
6 message sent by a first adjacent node;

7               b)   means for responding to said first link  
8 protocol message by

9                       electronically storing an entry including  
10 a link layer address of said first adjacent node in a link  
11 table, said indication including an indication of a candidate  
12 link to said first adjacent node; and

13                      setting a first timer to count for a first  
14 predetermined time period;

15                      transmitting a second link protocol  
16 message including a link layer address of said first adjacent  
17 node; thereafter

18               c)   means for, if said first timer expires prior to  
19 receipt of any third link protocol message from said first  
20 adjacent node, deleting said link table entry; and

21               d)   means for, if a third link protocol message  
22 including parameters of said first adjacent node is received  
23 prior to expiration of said first timer, changing said  
24 candidate link indication to a good link indication.

1           10.   The apparatus of claim 9 further comprising:  
2               means for, if said third link protocol message  
3 replying to said second link protocol message is received  
4 prior to expiration of said first timer,

5                      extracting parameters of said first adjacent  
6 node from said third link protocol message; and

7                      storing said parameters as a part of said  
8 entry.

1           11. The apparatus of claim 9 further comprising  
2 means for:

3           if said third link protocol message replying to said  
4 second link protocol message is received prior to expiration  
5 of said first timer,

6           invoking a network layer protocol to obtain a  
7 network layer address of said first adjacent node,

8           electronically storing, at said selected node, said  
9 IP address of said first adjacent node and said link layer  
10 address of said first adjacent node as an entry in an address  
11 resolution table.

1           12. The method of claim 11 wherein said invoking  
2 means comprises means for invoking a Reverse Address  
3 Resolution Protocol (RARP) program.

1           13. In a wireless packet communication network, a  
2 method for collecting, at a selected node, IP address  
3 information about adjacent nodes with which said selected node  
4 may directly communicate, said method comprising the steps of:

5           establishing a link between a selected node and a  
6 first adjacent node using a link layer protocol, wherein a  
7 link layer address of said first adjacent node is obtained;  
8 thereafter

9           invoking, responsive to successful establishment of  
10 a link in said establishing step, a network layer protocol to  
11 obtain a network layer address of said first adjacent node;  
12 and thereafter

13           storing said network layer address of said adjacent  
14 node and said link layer address of said adjacent node as an  
15 entry in an address resolution table.

1           14. The method of claim 13 wherein said invoking  
2 step comprises invoking a Reverse Address Resolution Protocol  
3 (RARP) routine to obtain an IP address of said first adjacent  
4 node.

1           15. In a wireless packet communication network,  
2 apparatus for collecting, at a selected node, IP address  
3 information about adjacent nodes with which said selected node  
4 may directly communicate, said apparatus comprising:

5           means for establishing a link between a selected  
6 node and a first adjacent node using a link layer protocol,  
7 wherein a link layer address of said first adjacent node is  
8 obtained;

9           means for invoking, responsive to successful  
10 establishment of a link in said establishing step, a network  
11 layer protocol to obtain a network layer address of said first  
12 adjacent node; and

13           means for storing said network layer address of said  
14 adjacent node and said link layer address of said adjacent  
15 node as an entry in an address resolution table.

1           16. The apparatus of claim 15 wherein said invoking  
2 means comprises means for invoking a Reverse Address  
3 Resolution Protocol (RARP) routine to obtain an IP address of  
4 said first adjacent node.